



UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

REGION VIII

999 18th STREET - SUITE 500
DENVER, COLORADO 80202-2466

SEP 2 1997

Ref: 8P2-W-GW

CERTIFIED MAIL
RETURN RECEIPT REQUESTED

Ms. Kathy Turner
Petroleum Engineering Technician
Petroglyph Operating Company, Inc.
6209 North Highway 61
Hutchinson, Kansas 67502

RE: UIC Minor Permit Modification
Conversion of Additional Well to
EPA Area Permit UT2736-00000
Antelope Creek Waterflood
Duchesne County, Utah

Dear Ms. Turner:

Your letter of July 17, 1997, requesting that the following production well be converted to a Class II enhanced oil recovery well and added to the Antelope Creek Waterflood, as authorized under EPA Area Permit #UT2736-00000, is hereby granted.

<u>NAME</u>	<u>LOCATION</u>	<u>EPA WELL PERMIT NO.</u>
Ute Tribal #18-13	SW/SW Section 18 T 5 S - R 3 W Antelope Creek Field Duchesne County, UT	#UT2736-04392

This additional well is within the boundary of the existing area permit for the Antelope Creek Waterflood (UT2736-00000), and this addition is made by minor permit modification according to the terms and conditions of that permit. Unless specifically mentioned in this Minor Permit Modification, all terms and conditions of the original permit will apply to the construction, operation, monitoring, and plugging and abandonment of this additional injection well. The proposed well location, well schematic, conversion procedures, plugging and abandonment plan and schematic, submitted by your office, have been reviewed and approved as follows:

- (1) The conversion of this production well has been reviewed, and found satisfactory, therefore, no corrective action is required.
- (2) Maximum injection pressure (Pmax) - the permittee submitted a list of five (5) individual zones, within the Ute Tribal #18-13, which were individually fraced and established an average fracture gradient (Fg) of



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Hutchinson, Kansas 67502

RE: UIC Mir
Conversion
EPA Area
Antelope
Duchesne

Scan under
UT 20736 - 00000
66 Modification - minor
Mod Approved 9/2/1997
Will need to link
with UT 20736 - 04392
in the new database
also under 81 Add Well
to Area Permit

Dear Ms. Turner:

Your letter of July 17, 1997, requesting that the following production well be converted to a Class II enhanced oil recovery well and added to the Antelope Creek Waterflood, as authorized under EPA Area Permit #UT2736-00000, is hereby granted.

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- (1) The **conversion** of this production well has been reviewed, and found satisfactory, therefore, no corrective action is required.
- (2) **Maximum injection pressure (Pmax)** - the permittee submitted a list of five (5) individual zones, within the Ute Tribal #18-13, which were individually fraced and established an average fracture gradient (Fg) of



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1.03 psi/ft. which was derived from instantaneous shut-in pressures (ISIP) from each zone. This F_g is acceptable to the Environmental Protection Agency (EPA), and a theoretical maximum allowable surface injection pressure (P_{max}), for this well, may be calculated as shown below:

$$P_{max} = [F_g - 0.433 (S_g)] d$$

Where: P_{max} = Maximum surface injection pressure at wellhead

d = 4423' shallowest perforations

S_g = Specific gravity of injected water

$$P_{max} = [0.996 - .433 (1.00)] 4423$$

$$P_{max} = 2490 \text{ psig}$$

Until such time as the permittee demonstrates that a fracture gradient other than 01.996 psi/ft applies to the disposal zones of this newly converted well, the maximum allowable wellhead injection pressure (P_{max}) for this well shall be 2490 psig.

- (3) The plugging and abandonment plan and schematic, submitted by your office, has been reviewed, and approved.

Prior to commencing injection into this well, permittee must fulfill permit condition Part II, C. 2. and have received written authorization to inject by the Environmental Protection Agency. In summary, these requirements for your newly permitted injection well are:

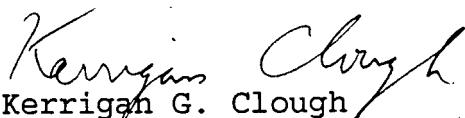
- (1) All conversion is complete and the permittee has submitted a completed Well Rework Record (EPA Form 7520-12).
- (2) The pore pressure has been determined.
- (3) The well has successfully completed and passed a mechanical integrity test (MIT); EPA form enclosed.

All other provisions and conditions of the area permit remain as originally issued, July 12, 1994.

If you have any questions, please contact Mr. Chuck Williams at (303) 312-6625.

Also, please direct the above requirements to Mr. Williams at the above letterhead address, citing MAIL CODE 8P2-W-GW. Thank you for your continued cooperation.

Sincerely,


Kerrigan G. Clough
Assistant Regional Administrator
Office of Pollution Prevention,
State and Tribal Assistance

Enclosure: EPA MIT Form

cc: Mr. Ronald Wopsock, Chairman
Uintah & Ouray Business Committee
Ute Indian Tribe

Ms. Elaine Willie, Environmental Director
Ute Indian Tribe

Mr. Norman Cambridge
BIA - Uintah & Ouray Agency

Mr. Gil Hunt
State of Utah Natural Resources
Division of Oil, Gas, and Mining

Mr. Jerry Kenczka
BLM - Vernal District Office

Mechanical Integrity Test
Casing or Annulus Pressure Test for Well UT2736-04392

U.S. Environmental Protection Agency
Underground Injection Control Program, UIC Implementation Section, 8WM-DW
999 18th Street, Suite 500, Denver, CO 80202-2466
This form was printed on 08/15/1997.

EPA Witness: _____ Date / /

Test conducted by: _____

Others present: _____

UTE TRIBAL #18-13	2R UC as of / /
ANTELOPE CREEK	SWSW 18 05S 03W
Petroglyph Operating Company, Inc.,	Hutchinson, KS Op ID PTG01
Last MIT: No record / /	
Max Allowed Press psig	1996 Max Reported Press 0 psig

Is this a regularly scheduled test? ☐ Yes ☐ No
Initial test for permit? ☐ Yes ☐ No
Test after well rework? ☐ Yes ☐ No

Well injecting during test? ☐ NO ☐ YES _____ BPD

Initial casing/tubing annulus pressure _____ psig
Does the annulus pressure build back up? ☐ Yes ☐ No

TUBING PRESSURE			
Initial	psig	psig	psig
End of Test	psig	psig	psig
CASING/TUBING ANNULUS PRESSURE			
Time	Test #1	Test #2	Test #3
0 min	psig	psig	psig
5			
10			
15 min			
20			
25			
30 min			
Result (circle)	Pass Fail	Pass Fail	Pass Fail